

**Notice of Allowability**

Application No.

10/705,450

Examiner

Paulos M. Natnael

Applicant(s)

SONG ET AL.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to communication filed 12/27/04.
2. ☒ The allowed claim(s) is/are 1-9.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

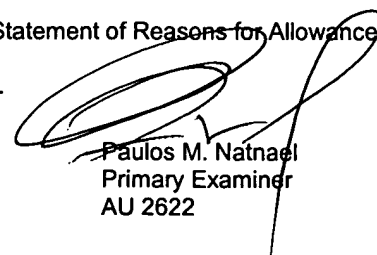
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 12/27/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
Paulos M. Natnael  
Primary Examiner  
AU 2622

## DETAILED ACTION

### *Allowable Subject Matter*

1. Claims 1-9 are allowed.
2. The following is an examiner's statement of reasons for allowance: the prior art fails to disclose a deinterlacing apparatus comprising: a field buffer which receives and stores a plurality of consecutive-interlaced fields, and then outputs, in response to a control signal, p-th interlaced line data of an m-th field, p-th interlaced line data of an (m+2)-th field, p-th interlaced line data of an (m+1)-th field, and (p+1)-th interlaced line data of the (m+1)-th field in series or the p-th interlaced line data of the (m+1)-th field, p-th interlaced line data of an (m+3)-th field, the p-th interlaced line data of the (m+2)-th field, and (p+1)-th interlaced line data of the (m+2)-th field in series, a shift buffer which receives signals output from the field buffer in series, converts the signals into parallel signals, and outputs first through fourth line data in parallel, a frame generator which receives the first through fourth line data from the shift buffer, senses motion between fields of the first through fourth line data between fields, and selectively outputs, as an output signal, a first result of temporally filtering adjacent line data or a second result of spatially filtering adjacent line data in response to the result of the motion sensing', and a line exchanger which receives the first line data of the shift buffer and the output signal of the frame generator and selectively exchanges the first line data with line data of the output signal of the frame generator in response to a line exchange signal, wherein the first line data are comprised of line data of the (m+1)-th field and line data of the (m+2)-th field which are repeatedly output, as in claim 1;

a deinterlacing apparatus comprising: a first storing unit which receives an input signal and buffers the input signal on a field basis', a second storing unit which includes first through fourth sub-memories receiving four line data, respectively, from an  $m$ -th field, an  $(m+1)$ -th field, an  $(m+1)$ -field, and an  $(m+3)$ -th field, respectively, stored in the first storing unit and sequentially storing the first through fourth line data; a frame generator which senses motion in the first line data and the third line data stored in the second storing unit, performs temporal or spatial filtering on the first through fourth line data in response to the result of the motion sensing, and outputs the result of the temporal or spatial filtering; and a line exchanger which receives an output signal of the first-sub-memory and an output signal of the frame generator, exchanges line data of the output signal of the first sub-memory with line data of the output signal of the frame generator in response to a predetermined line exchange signal, and simultaneously outputs two deinterlaced wherein line data of the  $(m+1)$ -th field and line data of the  $(m+2)$ -th field are sequentially stored in the first sub-memory, as in claim 5; and,

a deinterlacing method comprising: receiving and storing a plurality of consecutive interlaced fields; and then outputting, in response to a control signal,  $p$ -th interlaced line data of an  $m$ -th field,  $p$ -th interlaced line data of an  $(m+2)$ -th field,  $p$ -th interlaced line data of an  $(m+1)$ -th field, and  $(p+1)$ -th interlaced line data of the  $(m+1)$ -th field in series or the  $p$ -th interlaced line data of the  $(m+1)$ -th field,  $p$ -th interlaced line data of an  $(m+3)$ -th field, the  $p$ -th interlaced line data of the  $(m+2)$ -th field, and  $(p+1)$ -th interlaced line data of the  $(m+2)$ -th field in series', (b) receiving signals output in step (a) in series, converting the signals into parallel signals, and outputting first through fourth

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line data in parallel', (c) receiving the first through fourth line data output in step (b), sensing motion between fields in the first through fourth line data, and selectively outputting, as an output signal, a result of temporally filtering adjacent line data or a result of spatially filtering adjacent line data in response to the result of the motion sensing', and (d) receiving the first line data and a signal output in step (c) and selectively exchanging the first line data with line data of the signal output in step (c) in response to a predetermined line exchange signal, wherein the first line data are comprised of line data of the (m+1)-th field and line data of the (m+2)-th field which are repeatedly output, and in step (d), every odd-numbered or even-numbered line data of the first line data output signal are exchanged with their corresponding line data of the signal output in step (c) and then the results of the exchange are output, as in claim 8.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 9am - 5:30pm M,W, F (7am-3:30pm T,Th).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paulos M. Nathael  
Primary Examiner  
Art Unit 2622

PMN  
May 12, 2006